



# For every ventilation problem



# A Venmar CES energy - effective solution!

## Unitary General Product Overview

Venmar CES heat and energy recovery units include the following:

FEATURES	FUNCTIONS	BENEFITS
Energy recovery components are ARI certified	Certified to ARI Standard 1060-2001 for sensible, latent and total effectiveness	<ul style="list-style-type: none"> <li>• peace of mind for the specifier</li> <li>• provides the most accurate results in the industry by having an independent certification</li> <li>• ability to match loads more accurately in hot and humid climates for better operation</li> </ul>
Standard filtration for exhaust airstream	Filters out particulates	<ul style="list-style-type: none"> <li>• keeps energy recovery module clean</li> <li>• less maintenance</li> <li>• maintains high efficiency of energy recovery module</li> </ul>
Medium efficiency filtration for supply airstream	Dust spot efficiency greater than 30% Keeps energy recovery module clean	<ul style="list-style-type: none"> <li>• clean air for proper IAQ levels and low maintenance for energy recovery modules</li> </ul>
Aluminum energy module matrix	Energy recovery components that meet NFPA 90A	<ul style="list-style-type: none"> <li>• meets local fire regulation codes</li> <li>• safety concerns taken care of</li> </ul>
Easy to service	All regularly maintained components are accessible in 7 minutes or less	<ul style="list-style-type: none"> <li>• saves maintenance time and money</li> </ul>
All motors feature inverter spike resistant wire/auto overload protection	Ideal for inverters/speed controls	<ul style="list-style-type: none"> <li>• 100 times more resistant to transient spikes, high frequencies, and short rise time pulses produced by inverters</li> </ul>
Standard high efficiency motors for 143T, 145T and 184T frames	High efficiency electric motors	<ul style="list-style-type: none"> <li>• meets EPAC regulations and reduces operating costs</li> </ul>
High pressure ventilators	Nominal airflows rated at minimal 1" ESP (external static pressure) capability	<ul style="list-style-type: none"> <li>• allows for long distribution lines and ability to add duct modules without sacrificing airflow</li> </ul>
Optional internal heating and cooling available	Controls air quality, temperature and humidity	<ul style="list-style-type: none"> <li>• one complete package that takes care of all HVAC needs</li> </ul>
ETL and cETL approval on all products	Products approved to UL Standard 1812 "Ducted Heat Recovery Ventilators" and CSA C22.2 No. 113 Fans of Ventilators	<ul style="list-style-type: none"> <li>• meets electrical safety requirements</li> <li>• on-site approvals not required</li> </ul>
Meets ASHRAE 62-2001 for ventilation requirements	Energy recovery 100% outdoor air ventilators with exhaust and supply blowers in one cabinet	<ul style="list-style-type: none"> <li>• minimal energy impact when conforming to ASHRAE 62-2001</li> <li>• typical paybacks from 0 to 3 years by saving up to 80% in annual operating costs</li> <li>• reduces heating, cooling and humidification loads up to 75%</li> </ul>
Sloped drain pans	Positive drainage of condensate moisture	<ul style="list-style-type: none"> <li>• no standing water, eliminates microbial growth build up in drain pans</li> </ul>
Products tested in accordance to AMCA 210, ARI 1060 and ASHRAE 84-91	Test procedures for airflow and thermal effectiveness	<ul style="list-style-type: none"> <li>• accurate performance numbers for assurance of operation at design conditions</li> </ul>
Numerous defrost strategies	Defrost eliminates the potential for ice build up in the heat exchanger	<ul style="list-style-type: none"> <li>• full selection of defrost strategies to adapt to any application</li> </ul>

## Outdoor Economizer+ Units

The Economizer+ units are modules that are added to new or existing rooftop units (RTUs). They provide ventilation requirements by pretreating outdoor air before it enters the RTU. Venmar CES Economizer+ models offer the lowest installed cost and require no additional roof penetrations. The Economizer+ units feature a backward inclined blower for exhaust and axial fan for supply. These fan packages are non-overloading and eliminate the potential of motor failure which can be caused by the wide range of external static pressures.



**Economizer+350**

MODEL	AIRFLOW	DIMENSIONS L x W x H (approx)
<b>ECONO+350</b>	300 - 525 cfm [142 - 248 l/s]	27" x 27" x 28" [686 x 686 x 711mm]
<b>ECONO+750</b>	650 - 950 cfm [307 - 448 l/s]	35" x 31" x 33" [889 x 787 x 838mm]

MODEL	AIRFLOW	DIMENSIONS L x W x H (approx)
<b>ECONO+1500</b>	800 - 2200 cfm [378 - 1038 l/s]	56" x 43" x 50" [1422 x 1092 x 1270mm]
<b>ECONO+3000</b>	2000 - 4000 cfm [944 - 1888 l/s]	88" x 48" x 56" [2235 x 1219 x 1422mm]

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## Unitary Product

### Heat Recovery Ventilators (HRVs)

MODEL	AIRFLOW	DIMENSIONS* LxWxH (approx)	FEATURES	FUNCTIONS	BENEFITS
HRV450w	300 - 800 cfm [142 - 378 l/s]	21" x 32" x 94" [533 x 813 x 2388mm]	<b>Integrated drain pan(s)</b>	Easy to wash down unit for cleaning	Allows for easy clean up - no water penetration into insulation or building.
HRV600i	300 - 750 cfm [142 - 354 l/s]	34" x 28" x 25" [864 x 711 x 635mm]	<b>Flat plate heat exchanger constructed of aluminum or plastic</b>	Transfers mainly sensible energy from the exhaust to the supply airstream with similar effectiveness between plastic and aluminum	Plastic is ideal for corrosive applications; UL-94HB rated is available. Aluminum is ideal for applications that must conform to NFPA 90A.
HRV700i	300 - 800 cfm [142 - 378 l/s]	51" x 21" x 37" [1295 x 533 x 940mm]			
HRV1000w	400 - 1400 cfm [189 - 661 l/s]	21" x 41" x 93" [533 x 1041 x 2362mm]	<b>Dehumidification requirements in cool, dry climates</b>	Flat plate heat exchanger dehumidifies by exhausting moist air and supplying warm, dry air	Saves a significant amount in operating costs and expensive dehumidification equipment.
HRV1200i	700 - 1250 cfm [330 - 590 l/s]	34" x 41" x 25" [864 x 1041 x 635mm]	<b>Low cross leakage</b>	Less than 1% leakage from exhaust to supply airstreams	Ideal for source control applications.
HRV2000e HRV2000i	1200 - 2800 cfm [566 - 1322 l/s]	("e") 88" x 48" x 36" ("i") 91" x 49" x 30"	<b>Corrosive Application Product (coated cabinet and components)</b>	Heat recovery for special applications (ex. pools)	Long lasting product for corrosive environments.
HRV3000e/i	2500 - 3800 cfm [1180 - 1794 l/s]	131" x 57" x 66" [3327 x 1448 x 1676mm]			
HRV5000e/i	4000 - 5500 cfm [1888 - 2596 l/s]	144" x 70" x 73" [3658 x 1778 x 1854mm]	<b>Flat plate heat exchanger has no moving parts with sensible energy transfer</b>	Transfers mainly sensible energy from the exhaust to the supply airstream	Virtually maintenance free; saving money in servicing charges. A cost effective technology for cooler and/or dryer climates. Decreases heating loads and operational costs by up to 75%.
HRV6500e/i	5000 - 7000 cfm [2360 - 3304 l/s]	150" x 69" x 82" [3810 x 1753 x 2083mm]			
HRV8000e/i	6000 - 9000 cfm [2832 - 4248 l/s]	165" x 88" x 83" [4191 x 2235 x 2108mm]			
HRV10000e/i	8000 - 11500 cfm [3776 - 5428 l/s]	179" x 95" x 97" [4546 x 2413 x 2464mm]			

\* Unit dimensions may vary depending on options selected. Dimensions listed above are for base unit models only. Dimensions may increase when additional options are selected.

### Our unitary product line nomenclature: **ERV2000i**

- ERV:** Energy Recovery Ventilator (enthalpy wheel)
- HRV:** Heat Recovery Ventilator (aluminum or plastic flat plate heat exchanger)
- AHU:** Air Handling Unit (no energy recovery technology)

Nominal air volume (cfm)

- i:** interior installation
- e:** exterior installation
- w:** wallmount installation



HRV450w



HRV2000i



HRV700i



HRV600i

### Our finest v

- 15 year warranty for
- 5 year warranty for
- 2 year warranty on

# A Venmar CES energy - effective solution!

## Energy Recovery Ventilators (ERVs)

MODEL	AIRFLOW	DIMENSIONS* LxWxH (approx)	FEATURES	FUNCTIONS	BENEFITS
<b>ERV500e</b> <b>ERV500i</b>	400 - 700 cfm [189 - 330 l/s]	("e") 68" x 23" x 27" ("i") 58" x 23" x 23"	<b>Purge section (optional)</b>  <b>Long life perimeter and face seals</b>  <b>Free cooling is available (Economizer mode)</b>  <b>Enthalpy wheel construction</b>  <b>Self cleaning action</b>	Reduces cross contamination between supply and exhaust airstreams  Maintains very low leakage between exhaust and supply airstreams  Dry contacts stop the wheel rotation  Transfers sensible and latent energy from exhaust airstream to supply airstream. It is made of aluminum with desiccant coating.  Opposing flow of supply and exhaust airstreams promotes automatic removal of airborne particulates from the enthalpy wheel	Allows the installation of ERVs in applications where contamination is an issue and cooling loads are significant.  Cross leakage will not increase over the life of the product. Air quality is never sacrificed.  Saves operating costs during cooling periods.  Reduces cooling and heating loads. Conforms to NFPA 90A.  Lower maintenance time required.
<b>ERV1000i</b>	700 - 1450 cfm [330 - 684 l/s]	71" x 43" x 22" [1803 x 1092 x 559mm]			
<b>ERV1100w</b>	350 - 1200 cfm [165 - 566 l/s]	31" x 41" x 76" [787 x 1041 x 1930mm]			
<b>ERV1500e/i</b>	800 - 2000 cfm [378 - 944 l/s]	56" x 43" x 50" [1422 x 1092 x 1270mm]			
<b>ERV2000e</b> <b>ERV2000i</b>	1200 - 2800 cfm [566 - 1322 l/s]	("e") 88" x 48" x 36" ("i") 91" x 49" x 30"			
<b>ERV3000e/i</b>	2000 - 4000 cfm [944 - 1888 l/s]	88" x 48" x 56" [2235 x 1219 x 1422mm]			
<b>ERV5000e/i</b>	4000 - 5500 cfm [1888 - 2596 l/s]	98" x 78" x 66" [2489 x 1981 x 1676mm]			
<b>ERV6500e/i</b>	5000 - 7000 cfm [2360 - 3304 l/s]	110" x 82" x 76" [2794 x 2083 x 1930mm]			
<b>ERV8000e/i</b>	6000 - 9000 cfm [2832 - 4248 l/s]	120" x 89" x 88" [3048 x 2261 x 2235mm]			
<b>ERV10000e/i</b>	8000 - 11500 cfm [3776 - 5428 l/s]	136" x 96" x 93" [3454 x 2438 x 2362mm]			

\* Unit dimensions may vary depending on options selected. Dimensions listed above are for base unit models only. Dimensions may increase when additional options are selected.

## Air Handling Units (AHUs)

Venmar CES manufactures air handling units designed to be vertically mounted against an outside wall in a single zone application. The AHU1100w and AHU2000w units provide you with an outdoor air and total air capacity of 1,100 cfm and 2,000 cfm supply air respectively. Heating and cooling options are available to complete these packaged units.

MODEL	AIRFLOW	DIMENSIONS LxWxH (approx)
<b>AHU1100w</b>	800 - 1100 cfm [378 - 519 l/s]	26" x 32" x 81" [660 x 813 x 2057mm]
<b>AHU2000w</b>	1200 - 2000 cfm [566 - 944 l/s]	39" x 33.5" x 108" [991 x 851 x 2743mm]

Our product line has the **best warranty on the market**

Warranty for the flat plate heat exchanger  
Warranty for the enthalpy wheel and heat pipe heat exchanger  
Warranty on all parts



# Applied Product

## EnergyPack® and CustomPack® Ventilators

The applied product line includes EnergyPack® and CustomPack® products. An EnergyPack® unit is defined as any Venmar CES applied unit with two airflows, a single energy or heat recovery device and two fans. The flexibility of the EnergyPack® product line allows for standard or specialized unit configurations and a large variety of unit options to choose from. A CustomPack® unit is defined as any Venmar CES applied unit with or without a heat or energy recovery device that differs from the EnergyPack® criteria regarding airflows and fans. The CustomPack® units are divided into three categories: single airflow units, units with one fan or less and dual energy recovery device units.

FEATURES	FUNCTIONS	BENEFITS
<b>Enthalpy wheel for total energy transfer</b>	Transfers both sensible and latent energy from the exhaust to the supply airstream	Decreases your heating, cooling and humidification loads by up to 75%. Maintains relative humidity levels during all months of the year.
<b>Flat plate heat exchanger</b>	Transfers sensible energy from the exhaust to the supply airstream through the flat plate heat exchanger	No moving parts, ideal for dehumidification and corrosive applications (ex) pools.
<b>Heat pipe heat exchanger</b>	Transfers sensible energy from the exhaust to the supply airstream using liquid-gas phase change	Ideal for industrial process air applications with no moving parts and 0% cross contamination.
<b>Corrosive application product</b>	Polypropylene flat plate heat exchanger and coated cabinet and components	Long lasting product in corrosive environments (ex. pools). UL-94HB rated available.
<b>Sloped roof for outdoor models</b>	Positive drainage of rain water	No standing water, eliminating any potential leaking.
<b>Numerous defrost strategies</b>	Defrost eliminates the potential for ice build up in the heat exchanger	Full selection of defrost strategies to adapt to any application.
<b>Optional internal heating and cooling available</b>	Controls air quality, temperature and humidity levels	One package that takes care of all HVAC needs.
<b>Hinged access doors</b>	Easy access to components	Easy access to internal components for maintenance and service.
<b>Stainless steel, double-sloped IAQ drain pans</b>	Easy to wash down unit for cleaning or to collect condensate	Allows for easy clean up - no water penetration into insulation or building. Allows no standing water.
<b>High efficiency filtration</b>	Dust spot efficiency up to 99.997%	Allows for removal of particulates for sensitive applications (ex) hospitals.
<b>Double wall construction</b>	Prevents direct access to insulation	No potential indoor air quality problems due to microbial growth. Easy to clean.

### EnergyPack® Product Line Nomenclature:

## EnergyPack® W12e

**W** - The type of heat or energy recovery device specified.

- W:** Enthalpy wheel
- P:** Flat plate heat exchanger (polypropylene or aluminum)
- H:** Heat pipe heat exchanger
- Ws:** Sensible only wheel

**12** - Indicates the type of fan and cabinet that is specified.

The first digit indicates the type of fan specified.

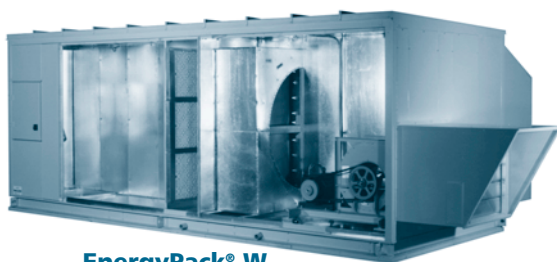
- 1 or 2:** DWDI forward curved fan
- 3 or 4:** DWDI backward inclined fan, airfoil or not
- 5 or 6:** SWSI plenum fan (backward inclined airfoil)

The two digits together indicate a pre-defined cabinet size. Each cabinet size has a CFM range associated with it.

- 12:** Cabinet W12 - CFM range of 2,000 to 2,750

**e** - Indicates where the unit is to be installed.

- e:** Unit installed outdoors (exterior of the building)
- i:** Unit installed indoors (interior of the building)



**EnergyPack® W**

### CustomPack® Product Line Nomenclature:

## CustomPack® WWs-2-09e-FF

**WWs** - The type of heat or energy recovery device (alone or in combination) specified.

- W:** Enthalpy wheel
- Ws:** Sensible only wheel
- P:** Flat plate heat exchanger (polypropylene or aluminum)
- H:** Heat pipe heat exchanger
- U:** U-Shaped heat pipe
- A:** No heat or energy recovery device (make-up or air handling units)

**2** - The number of airstreams in the unit.

**09** - Supply cfm (rounded to the nearest thousand, ex: 9,000).

**e** - Indicates where the unit is to be installed.

- e:** Unit installed outdoors (exterior of the building)
- i:** Unit installed indoors (interior of the building)

**F** - Indicates the type of supply fan used.

- F:** DWDI forward curved fan
- B:** DWDI backward inclined and backward inclined airfoil fans
- P:** SWSI plenum fan (backward inclined airfoil)
- X:** No fan

**F** - Indicates the type of exhaust fan used.

- F:** DWDI forward curved fan
- B:** DWDI backward inclined and backward inclined airfoil fans
- P:** SWSI plenum fan (backward inclined airfoil)
- X:** No fan

**NOTE:** See the Venmar Select™ Software or the Applied Product Data Manual for more details on the selection of applied products.

# Three Energy Recovery Technologies from Venmar CES



## Enthalpy Wheel

- both sensible and latent energy transfer
- up to 75% total effectiveness
- low cross leakage with purge section
- reduces cooling loads by up to 75%



## Flat Plate Heat Exchanger

- mainly sensible energy transfer
- up to 65% sensible effectiveness
- less than 1% cross leakage
- available in aluminum or plastic for various applications



## Heat Pipe Heat Exchanger

- mainly sensible energy transfer
- up to 55% sensible effectiveness
- virtually 0% cross leakage



A Participating Company in the  
ARI 1060-2001 Certification Program.

**For more information, contact:**

**air2energy**

**<http://www.air2energy.com.au>**

**PO Box 853, Woodend, Victoria 3442**

**Telephone: 0354273175    0412482060**

**Venmar CES Inc.**

Saskatoon, SK Canada

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